Utility Green Pricing Programs:

Market Evolution or Devolution?

As restructuring gains momentum, utilities are developing green pricing programs in response to public preferences for clean, renewable energy sources.

BY BLAIR G. SWEZEY

The electric power industry is undergoing unprecedented change. The shift is particularly apparent in power generation, where the historical economies of scale that favored a single provider—the electric utility—have been exhausted. Nonutility companies already compete with utilities to sell electricity from smaller, highly efficient power plants.

Several states have either already passed or are considering new laws to "restructure" the electric power industry to accelerate the pace of competition. While analysts expect increased competition in electricity supply to result in lower rates, it will also mean that customers, most for the first time, will be able to choose their electricity suppliers.

Anticipating this competition, some electric utility companies have begun to develop and offer specialized services to their customers. One type of service in particular—a renewable-energy-based or "green pricing" service—is receiving increasing attention. By offering green pricing, utilities hope to be the electric service provider of choice to those customers with strong environmental values.

SMUD

The Wilton Bible Church in Wilton, California, sports 24 kilowatts of photovoltaics — 18 kW on the sanctuary (shown) and 6 kW on an adjacent building—as part of the Sacramento Municipal Utility District's (SMUD's) PV Pioneers green pricing program.

A Short History

Under the historical utility structure, utilities developed formal plans to build or acquire the power resources necessary to service their customers 20 to 30 years into the future. Electric power is a highly capital-intensive industry, and power plants have 30 to 40-year lifetimes. Thus, the choices made by utilities have had long-term ramifications for the mix of energy resources used for electricity generation. Except for hydropower, utilities have largely eschewed the use of renewable energy sources in favor of fossil fuels and nuclear technology.

In an early effort to break the historical utility monopoly on electricity generation, the U.S. Congress passed the Public Utility Regulatory Policies Act (PURPA) in 1978. PURPA required utilities to purchase power from certain types of small generators, particularly those using renewable energy sources and more efficient cogeneration systems. This law created the proverbial "hole in the dike" that resulted in today's flood toward competition.

PURPA was immensely successful in introducing new electric technologies into the marketplace, including a new set of power technologies that harnessed renewable energy sources, such as solar, wind, biomass and geothermal. In some measure, the success of PURPA, particularly for renewables, relied on projections that world oil prices would continue to rise and that domestic natural gas would be in short supply. At the time, the only utility options were to build large coal or nuclear plants. Some utilities chose to avoid these large-scale investments with power purchases from nonutility generators (NUGs). By 1990, NUGs accounted for over one-half of annual new generation capacity additions. And at one point, renewables accounted for about one-third of NUG capacity additions.

However, as natural gas became cheaper and more plentiful, utility and nonutility producers alike turned to gas as the primary fuel for new generation. Also, those utilities that chose to pursue large power plant construction programs suddenly found themselves with oversupply because of slower than projected demand growth, and electricity market prices began to fall. As large intra-regional electricity price differentials appeared between high-cost and low-cost utilities, competitive pressures began to mount for utilities to reduce rates, particularly to their largest and most price-sensitive customers. Renewable energy producers—despite dramatic economic improvements in renewable energy technologies—were also caught in this price squeeze.

The Evolution of Green Pricing

During this same period, the concept of integrated resource planning (IRP) developed as a more comprehensive process for comparing resource alternatives and addressing uncertainty in electricity planning. IRP considers both the direct costs of power generation that have traditionally driven utility resource decisions and indirect costs and benefits, such as relative environmental impacts. IRP also explicitly involves greater public input to the utility resource planning process. In the Energy Policy Act of 1992, the U.S. Congress formally endorsed IRP as a mechanism that utilities should use for selecting future resources. Through 1994, 38 states had formally adopted IRP to guide utility resource planning, and 19 states (including 16 of the former) had codified IRP in legislation.

The existence of an IRP process provides a broader framework for the consideration of renewables in resource planning and procurement. Presumably, if an IRP process properly considers many different resource attributes, it will capture the many positive attributes of renewables. Thus, the cost-effectiveness of renewable energy technologies may improve once different non-cost resource values, such as environmental quality and fuel diversity, are included in the analysis. Indeed, several utilities committed to the development of renewable energy resources as a result of an IRP process.

The concept of "green pricing" has arisen as an adjunct to the consideration of renewables in IRP. It was first proposed as an optional service that utilities could offer to customers who wanted to increase the utility's reliance on renewables beyond that identified in the IRP. Participating customers would pay a price premium on their electric bill to cover the incremental cost of the additional renewable energy. However, green pricing was not conceived to be a substitute for cost-effective renewables development, nor for renewables-related research and development activities.

To date, only a handful of utilities have developed and implemented green pricing programs, and several others are actively studying the concept. The programs offered fall into three general categories:

1 Renewable energy contribution fund—the utility offers customers an opportunity to contribute to a utility-managed fund for renewables. Most often, the utility does not specify in advance the renewables projects it will pursue, but decides this after it achieves some pre-determined financial threshold.

An example of this type of program is the Renewable Energy Trust, operated by Public Service Company of Colorado (PSCo). The PSCo program offers residential customers the opportunity to make voluntary contributions to a fund that is used to accelerate the development of renewable energy projects.

2 Tailored renewable energy projects—the utility identifies a particular renewable project for which it solicits contributions. After it receives some minimum number of "subscriptions," the utility builds the project.

One utility offering this type of service is Traverse City Power and Light in Traverse City, Michigan. This utility installed a 600-kW wind turbine in its community after securing commitments from 145 residential and 20 commercial customers (3.1 percent of the total customer base) to contribute an extra 1.58¢/kWh for the wind energy. In exchange for their participation, customers are protected from future utility fuel cost adjustments.

The Sacramento Municipal Utility District (SMUD) has established a PV Pioneers pilot program, which offers grid-connected PV rooftop systems to 100 residential customers each year. Participating customers pay a $4 flat monthly fee, amounting to about a 15 percent rate premium, for a period of ten years, and SMUD subsidizes the rest of the system cost.

3 Renewable electric grid service—the utility may acquire and bundle power from a number of renewables projects with other power sources for sale to customers.

Wisconsin Electric Power Company offers residential, farm and small commercial customers the choice of purchasing power from existing renewable energy projects, including waste-wood-fired power and hydropower.

Steve Smiley

Traverse City Power and Light installed this 600-kW wind turbine after securing commitments from 145 residential and 20 commercial customers to contribute an extra 1.58¢/kWh for the wind energy.

Keys to Success

Although actual experience with green pricing programs is limited, several general principles have emerged that appear to affect program success:

• **Designing a Competitive Product**—Customers are skeptical of utility attempts to collect more money for any type of differentiated service. Utilities should strive to offer the most competitive green service possible by bundling renewables with existing lower cost generation options, taking advantage of existing federal and state subsidies and incentives, collaborating with other entities or pursuing other innovative pricing approaches.

• **Providing Value to Customers**—Customers are more likely to accept some additional cost for renewables if they perceive some gain in personal value. Examples of providing value include protection from fossil fuel price increases, installing residential or community-based systems from which customers receive a direct benefit or formulating contribution programs to offer tax advantages to customers. Protection from future liabilities for environmental damage associated with coal and nuclear plant operation would also have value to some customers.

• **Educating Customers**—Beyond the first wave of "early adopter" customers, utilities must find ways to educate their customers about the virtues of their green product. An obvious risk for the utility is that by differentiating a "green" product, it may call into question the virtues of the rest of the utility's (less than green) resource mix. Nevertheless, an untapped market exists to sell green power, and utilities have a window of opportunity to build "brand loyalty" in this market before retail competition arrives.

• **Implementation**—The utility must make a corporate commitment to the green product. Customers must feel that, in addition to their personal values, they are contributing to the "greening" of the utility company. This is what helps build long-term brand loyalty.

A Mixed Blessing?

From the utility perspective, many green pricing programs have been successful because they met the utility's initial goals of marketing a green power product to a limited number of customers. While these utilities may be learning about the environmental preferences of their customers, they are developing little new renewables capacity, especially compared to past development under PURPA and utility IRP commitments.

Many renewable and consumer advocates also question a fundamental premise behind green pricing—that these programs will actually benefit renewables in the long run and that the traditional utility is the appropriate vehicle for marketing renewables. Some argue, for example, that because renewables provide benefits to all customers, all customers should pay their fair share. Green pricing programs essentially ask a subset of utility ratepayers to fund a public good—a cleaner environment —through voluntary contributions rather than public policy measures.

Supporters are also concerned that green pricing programs may perpetuate the perception that renewables are uneconomic resources, just at the time when many renewables are approaching more widespread cost effectiveness. To date, utilities generally price renewables against their marginal cost of energy (which is very low), rather than the value of the resource as reflected in the utility's IRP.

Utilities may not have an incentive to develop successful programs. Utilities with a large existing base of coal and nuclear, for example, may fear that substantial public support for cleaner energy sources could undermine future sales of their existing resource mix. Another concern is that unsuccessful programs will harm renewables by reinforcing the traditional utility position that the public is not willing to pay for a cleaner energy system.

And there are no market alternatives to utility programs. Conceivably, a competitive electricity market with multiple service providers would not only stimulate different types of renewable energy services, but also provide price competition. Two cases in which neighboring utilities offer similar types of green power services provide important examples.

In Colorado, Public Service Company of Colorado has filed an application with the state Public Utilities Commission (PUC) for authorization to offer a wind energy tariff to interested customer "subscribers." PSCo market research has found that about 5 percent of its residential customers want the utility to offer wind generation and that customers are willing to pay a premium of about 2.5 to 4.0¢/kWh for this energy, so PSCo proposes to charge a rate in this range. At the same time, however, the Fort Collins, Colorado, municipal utility is offering customers within the city the opportunity to subscribe to an optional wind energy service at a price premium of no more than 2.0¢/kWh.

And in the Pacific Northwest, two utilities are competing to provide green power services to wholesale customers. The Bonneville Power Administration (BPA) is offering a short-term green power product, priced at 3.5¢/kWh. In response, Portland General Electric has filed for PUC approval of an optional tariff rider for large industrial and commercial customers under which participating customers would pay a renewable price premium of only 1.0¢/kWh in order to match the price of the BPA service.

SMUD

Dave Collier (left) and Don Osborn of the Sacramento Municipal Utility District (SMUD) discuss the Siemens photovoltaic array SMUD installed on the home of PV Pioneers Wesley and Linda Dunning.

As supporters search for mechanisms to sustain markets for renewables, it is appropriate to ask if electric utility companies, many of which have resisted greater use of renewable energy sources, can now be expected to embrace renewables, or will there be greater opportunities for renewables in a more competitive electricity market in which customers have access to alternative suppliers? In a future issue of SOLAR TODAY, I will examine some early evidence developing from competitive electricity market experiments. Stay tuned. ✲

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